Appendix B. Comparison of Current Study Mercury Data in Reaches 6 and 7 and Biodiversity Research Institute (BRI) Connecticut River Reservoir Sampling

The Biodiversity Research Institute (www.briloon.org) of Gorham, ME, headed by Dr. Dave Evers, provided access to their database of total mercury in smallmouth bass, yellow perch and white suckers from their 2000 through 2003 monitoring studies in upper Connecticut River reservoirs (Reach 6 - McIndoe Falls Reservoir and Comerford Reservoir and Reach 7 - Moore Reservoir). Total mercury concentrations and individual fish weight and length were statistically and graphically compared with the results of the Connecticut River Fish Tissue Contaminant Study.

White Suckers

BRI only provided total mercury data for white sucker fillets, so no comparison of whole white sucker data was possible. EPA sampled generally larger white suckers in Reach 6 than BRI sampled from the Comerford Reservoir (Figure 1).

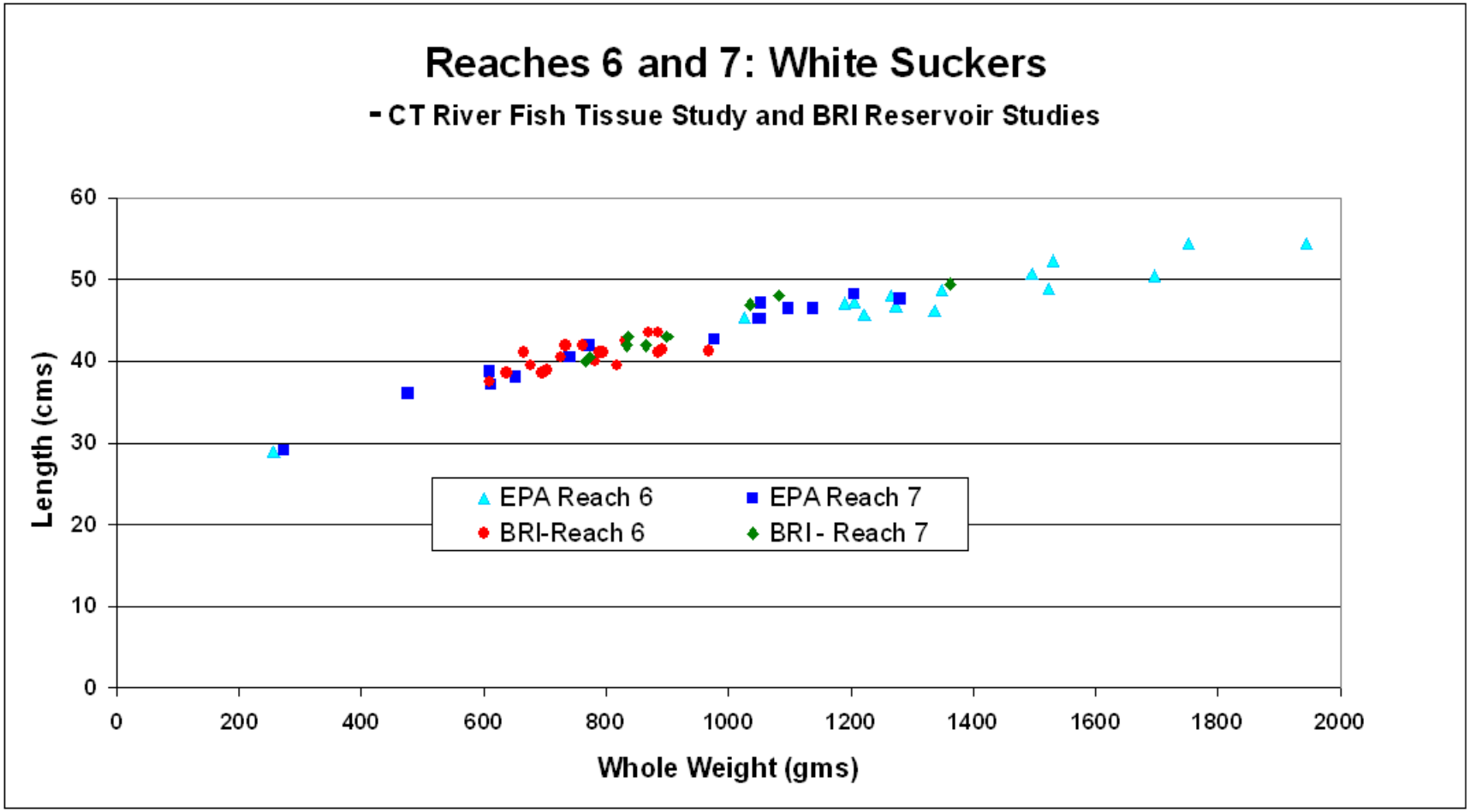

Figure 1. Weight and Length of White Suckers Sampled in Reaches 6 and 7 and by BRI Reservoirs Studies

The generally larger white suckers sampled by EPA may account for the lower level of total mercury in BRI white sucker fillets. When comparing white sucker fillet total Hg in Reach 6 with BRI fish sampled in the Comerford Reservoir the non-parametric Kruskal-Wallis test found a marginally statistically significant difference (p=0.04), however, an ANOVA was not significant (p=0.29) (Figure 2).

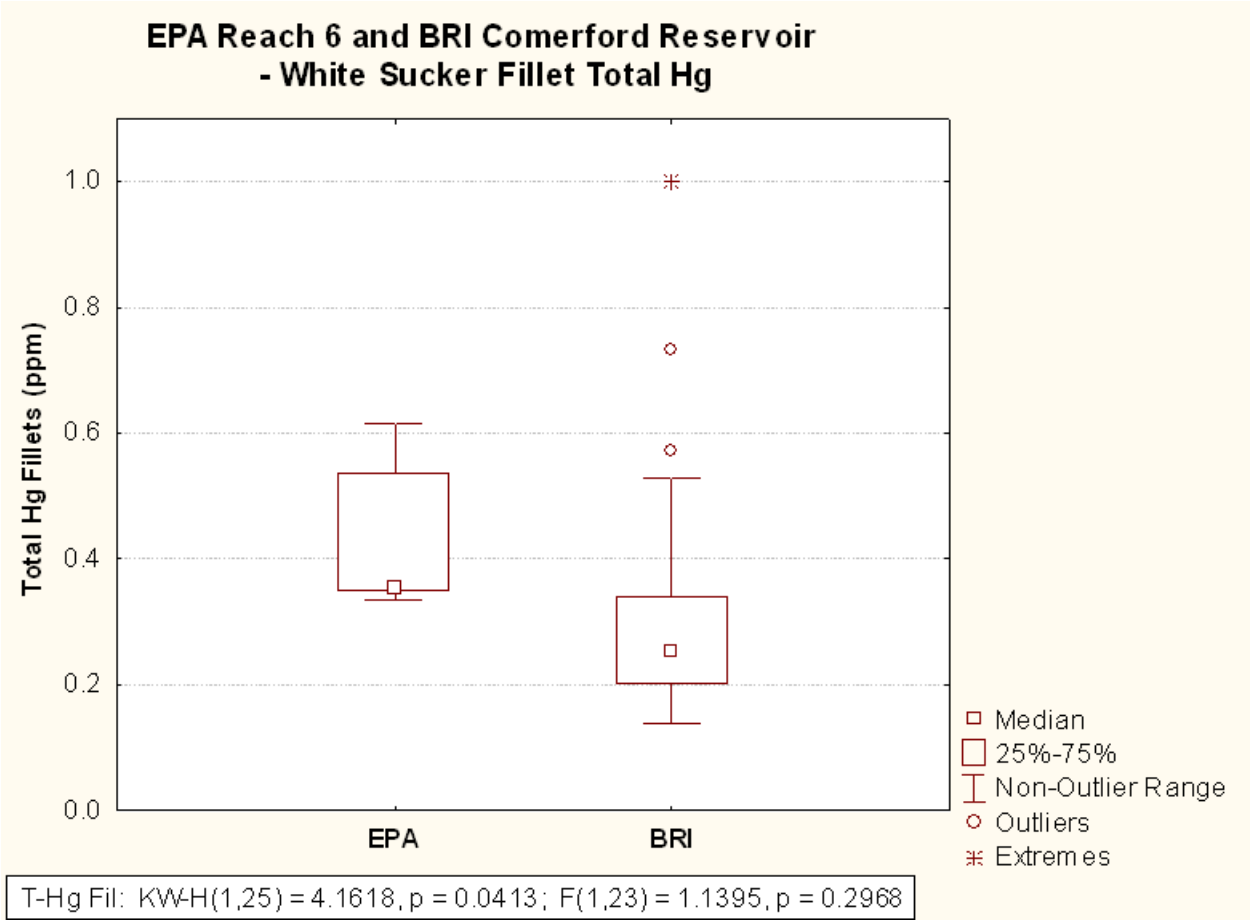

Figure 2. Total Mercury in White Sucker Fillets sampled by EPA in Reach 6 and BRI in the Comerford Reservoir

In Reach 7 EPA and BRI sampled very similarly sized white suckers. BRI's sample of Moore Reservoir had a lower median concentration of total mercury in white sucker fillets than did EPA's sample. However, the differences were not statistically significant (Figure 3).

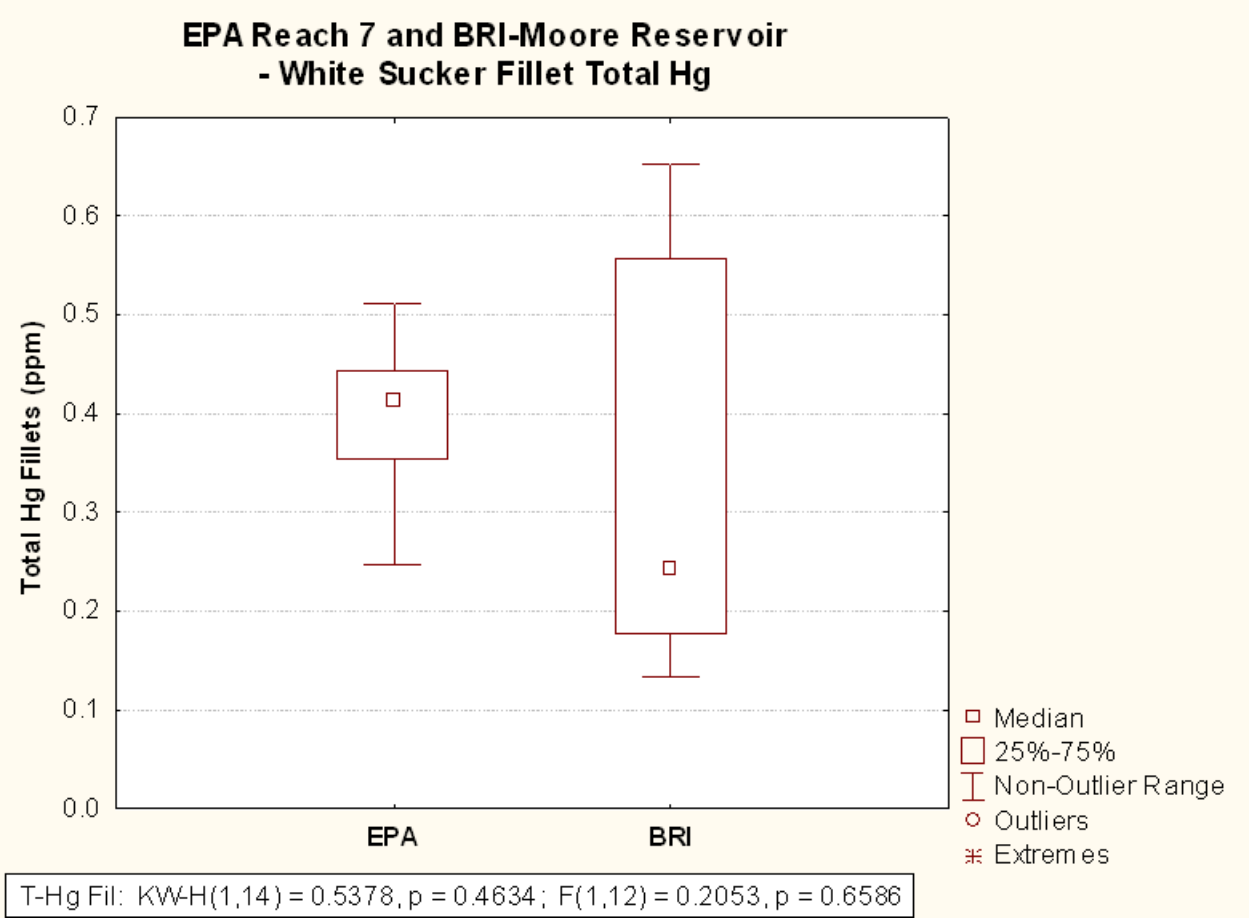

Figure 3. Total Mercury in White Sucker Fillets sampled by EPA in Reach 7 and BRI in the Moore Reservoir

Yellow Perch

Yellow perch sampled by EPA and BRI in Reach 6 were highly similar in size (Figure 4). However, in Reach 7 BRI sampled many much smaller yellow perch from the Comerford Reservoir (45 fish) and the McIndoes Falls Reservoir (19 fish). In Reach 6 EPA and BRI sampled very similarly sized yellow perch.

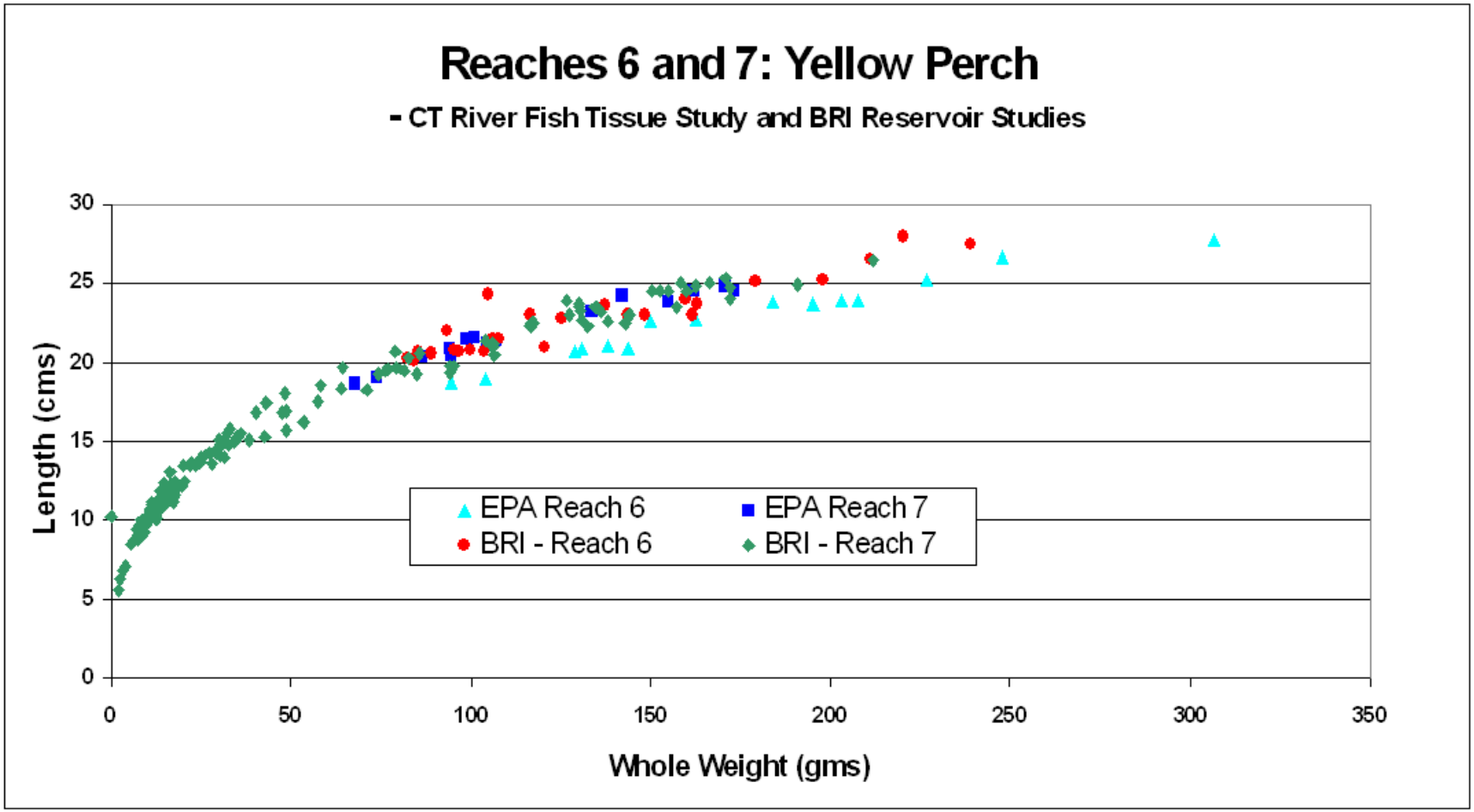

Figure 4. Weight and Length of Yellow Perch Sampled in Reaches 6 and 7 and by BRI Reservoir Studies

Total mercury in whole yellow perch sampled in Reach 6 and by BRI in Comerford and McIndoes Falls Reservoirs were not significantly different (Figure 5).

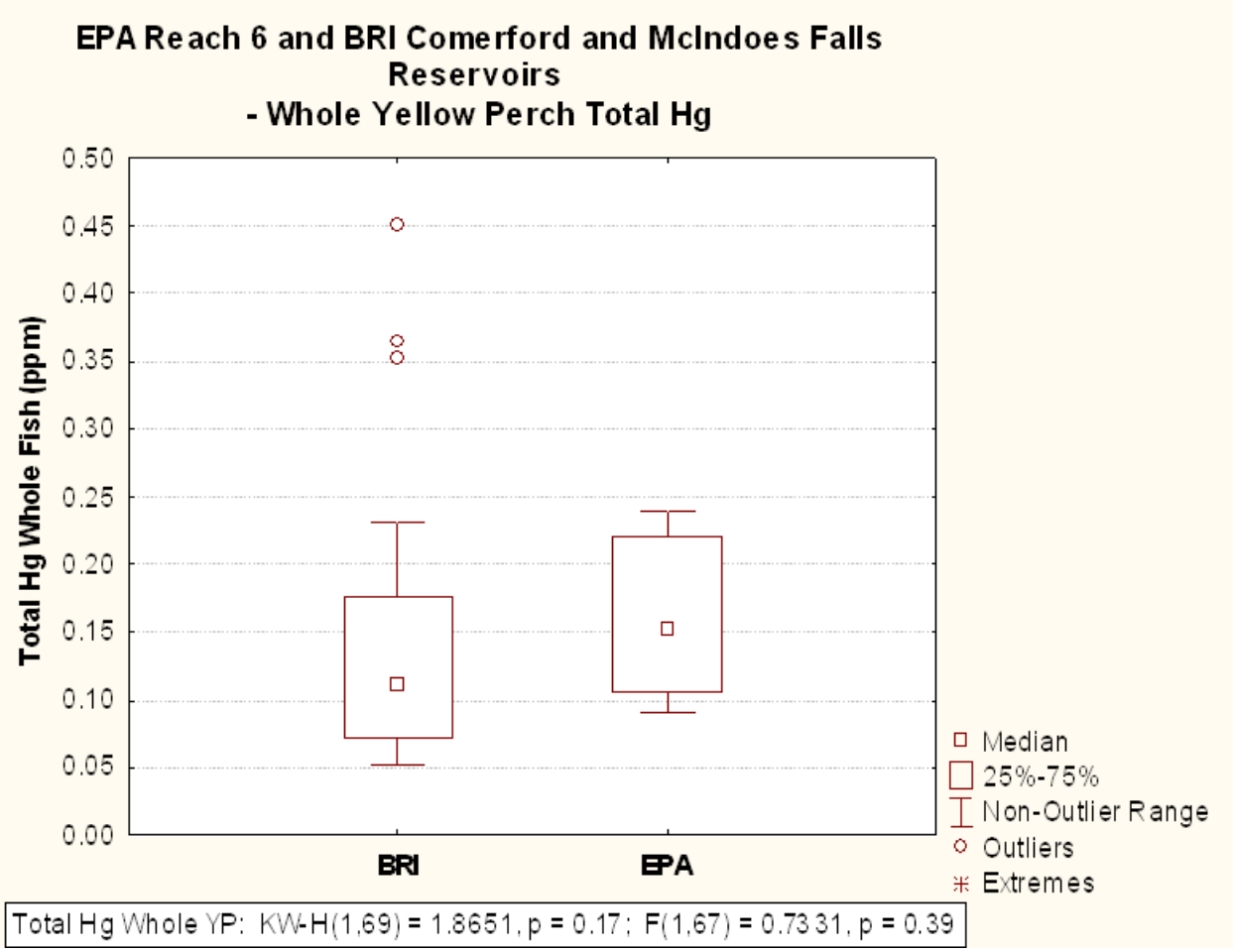

Figure 5. EPA Reach 6 and BRI Comerford and McIndoes Falls Reservoirs - Whole Yellow Perch Total Hg

BRI yellow perch from Moore Reservoir were sub-sampled for this analysis, excluding all fish with a total length of less than 18.0 cm. The whole yellow perch sampled by BRI in Moore reservoir had significantly higher total mercury than those sampled by EPA in Reach 7 (Figure 5).

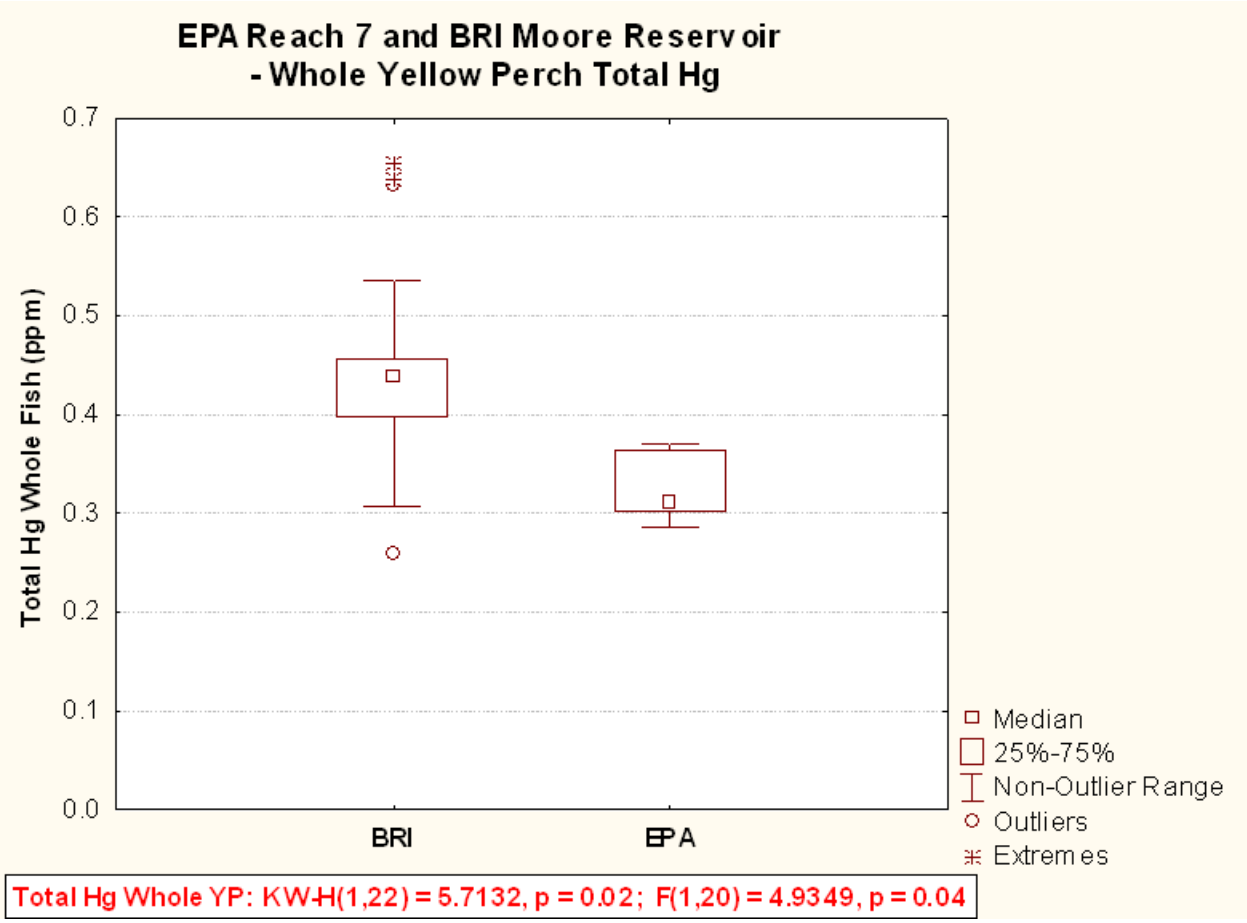

Figure 6. EPA Reach 7 and BRI Sampling of Moore Reservoir - Whole Yellow Perch Total Hg

The yellow perch fillets sampled by BRI in Comerford and McIndoes Falls Reservoirs had significantly higher total mercury than did the yellow perch fillets sampled by EPA in Reach 6 (Figure 6).

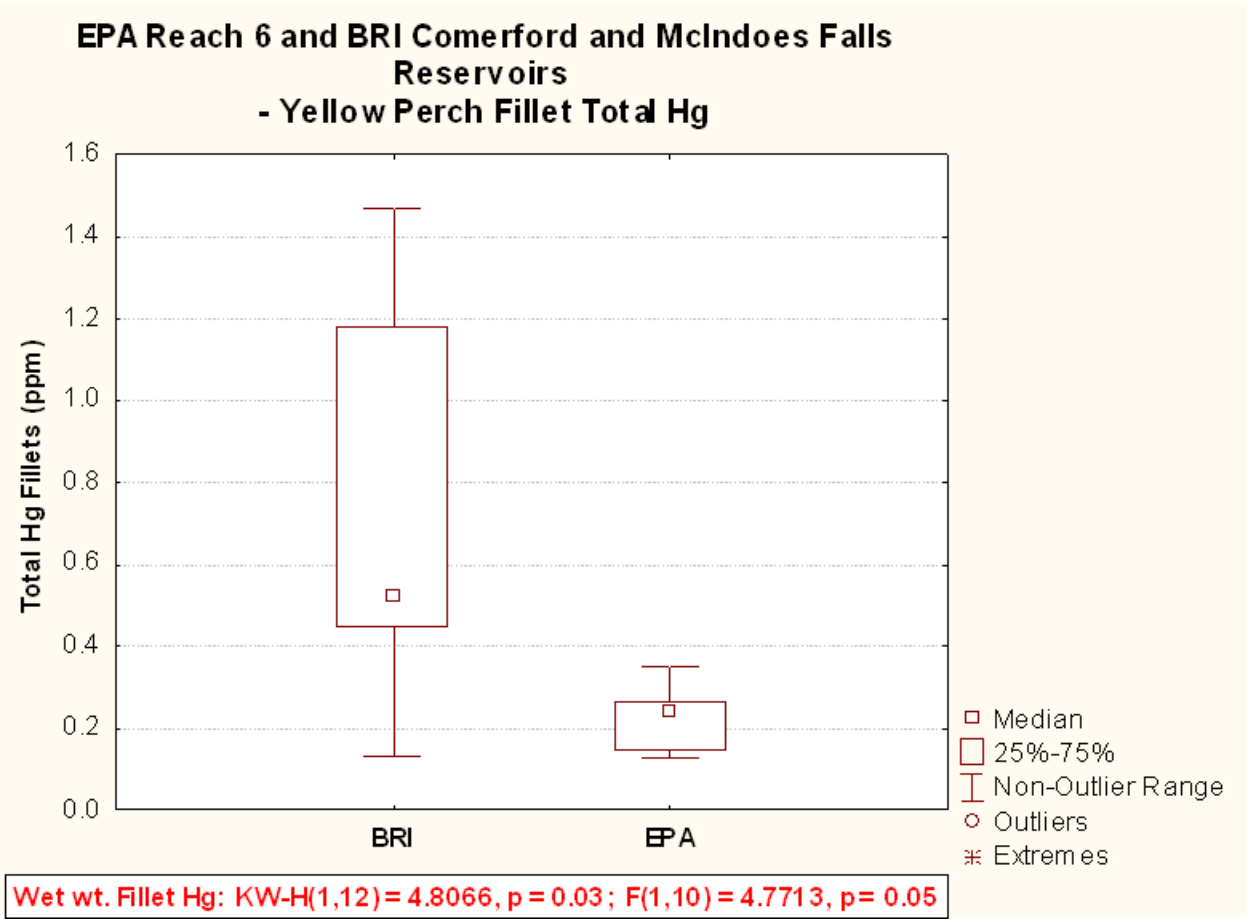

Figure 7. EPA Reach 6 and BRI Sampling in Comerford and McIndoes Falls Reservoirs - Yellow Perch Fillet Total Hg

Yellow perch fillets sampled by BRI[1] in Moore Reservoir had significantly higher total mercury than the yellow perch fillets sampled by EPA in Reach 7 (Figure 7).

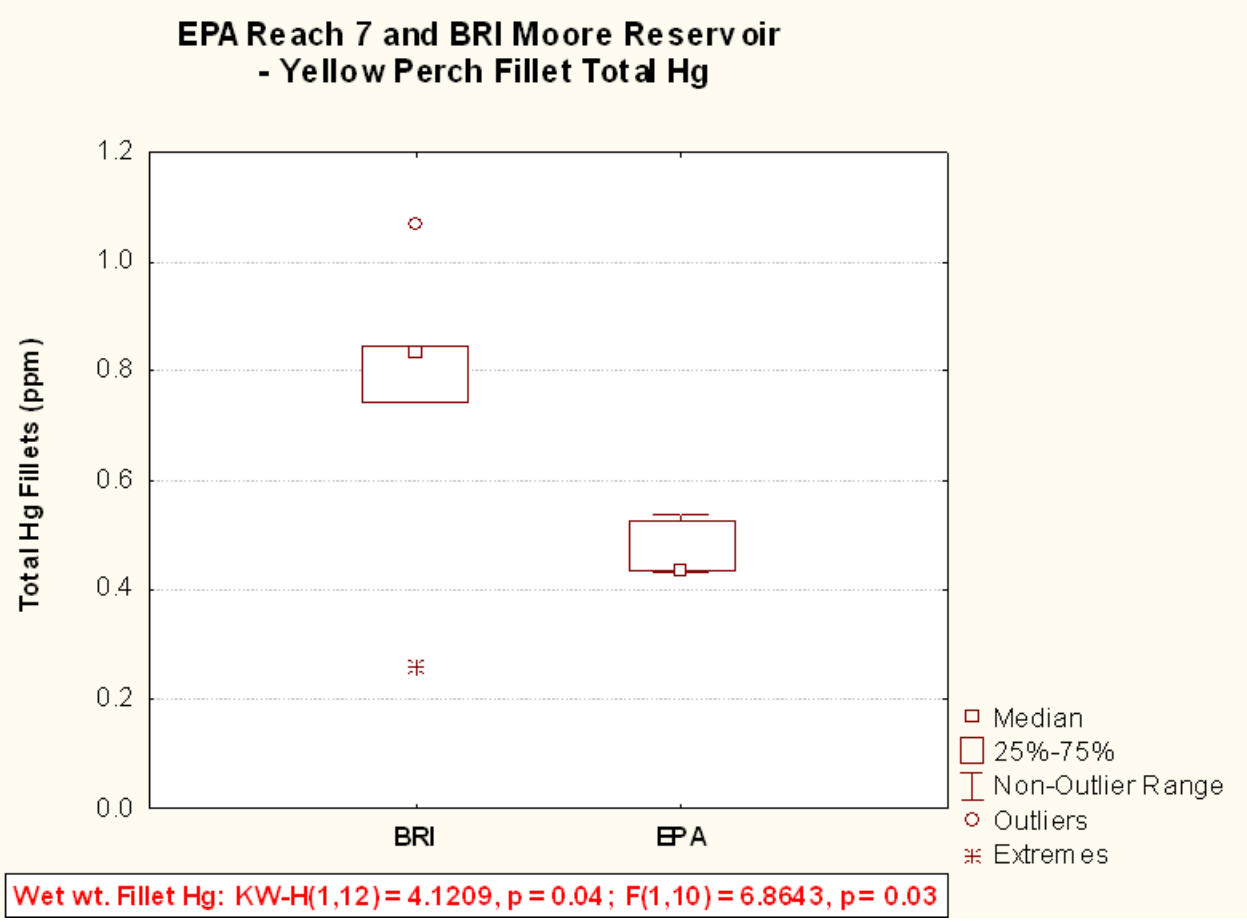

Figure 8. EPA Reach 7 and BRI Sampling in Moore Reservoir - Yellow Perch Fillet Total Hg

[1]BRI yellow perch from Reach 7 were sub-sampled for this analysis, excluding all fish with a total length of less than 18.0 cm.

Smallmouth Bass

BRI sampled several much larger smallmouth bass than EPA in Reach 6, thus a sub-sample were taken excluding all BRI SMB in Reach 6 with a total length greater than 34.0 cm. Only smallmouth bass fillets were compared. Whole smallmouth bass sampled by EPA in Reaches 6 and 7 were not compared to BRI reservoir sampled fish, owing to the very different sizes (Figure 10).

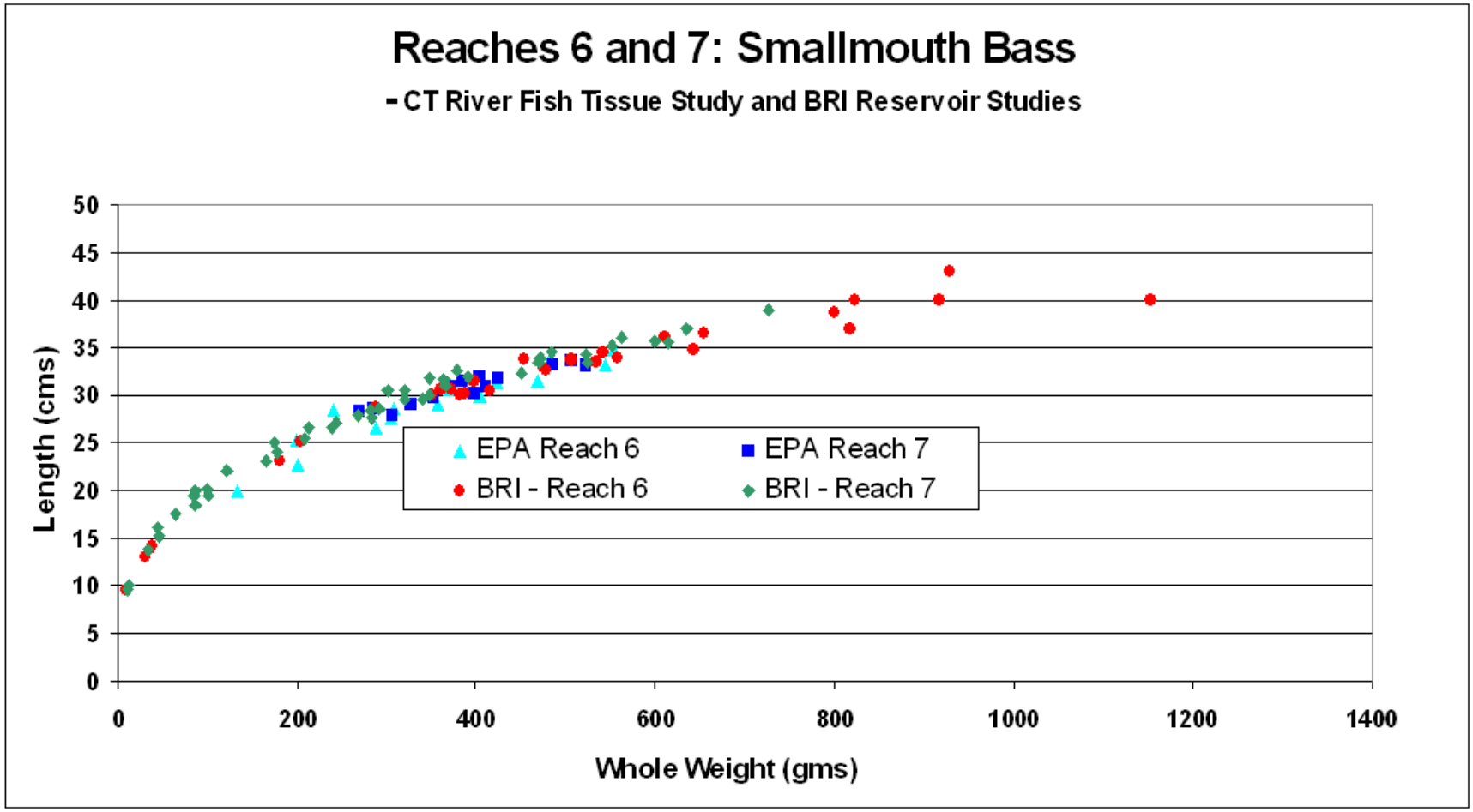

Figure 9. Weight and Length of Smallmouth Bass Sampled in Reaches 6 and 7 and by BRI Reservoir Studies

Total mercury in smallmouth bass fillets by BRI in Comerford and McIndoes Falls Reservoirs was significantly higher than in the sub-sample of smallmouth bass sampled by EPA in Reach 6 (Figure 11).

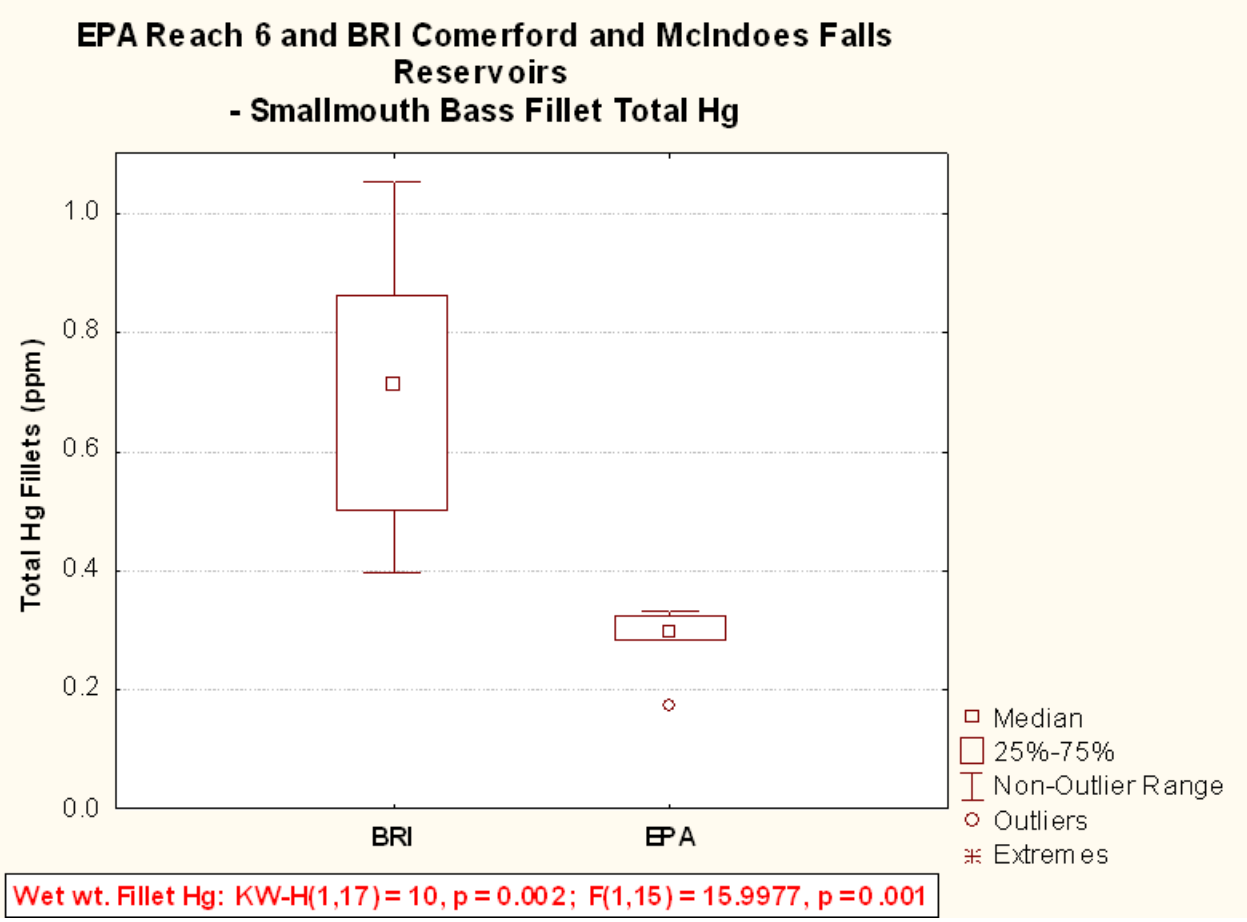

Figure 10. EPA Reaches 6 and 7 and BRI Comerford and McIndoes Falls Reservoirs - Smallmouth Bass Fillet Total Hg

Total mercury in smallmouth bass fillets sampled by BRI in Moore Reservoir was significantly higher than in fish sampled by EPA in Reach 7 (Figure 12).

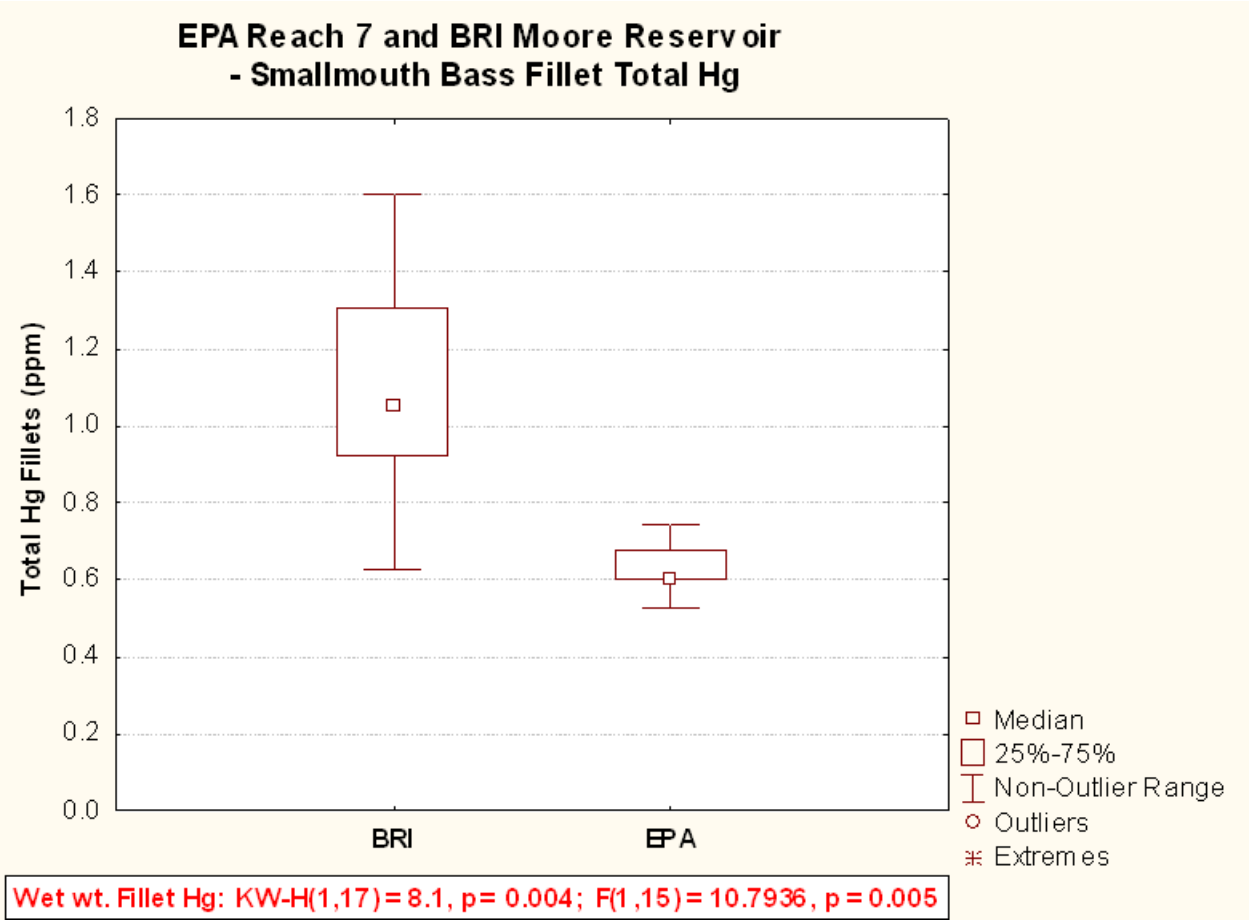

Figure 11. EPA Reach 7 and BRI Sampling in Moore Reservoir - Smallmouth Bass Fillet Total Hg